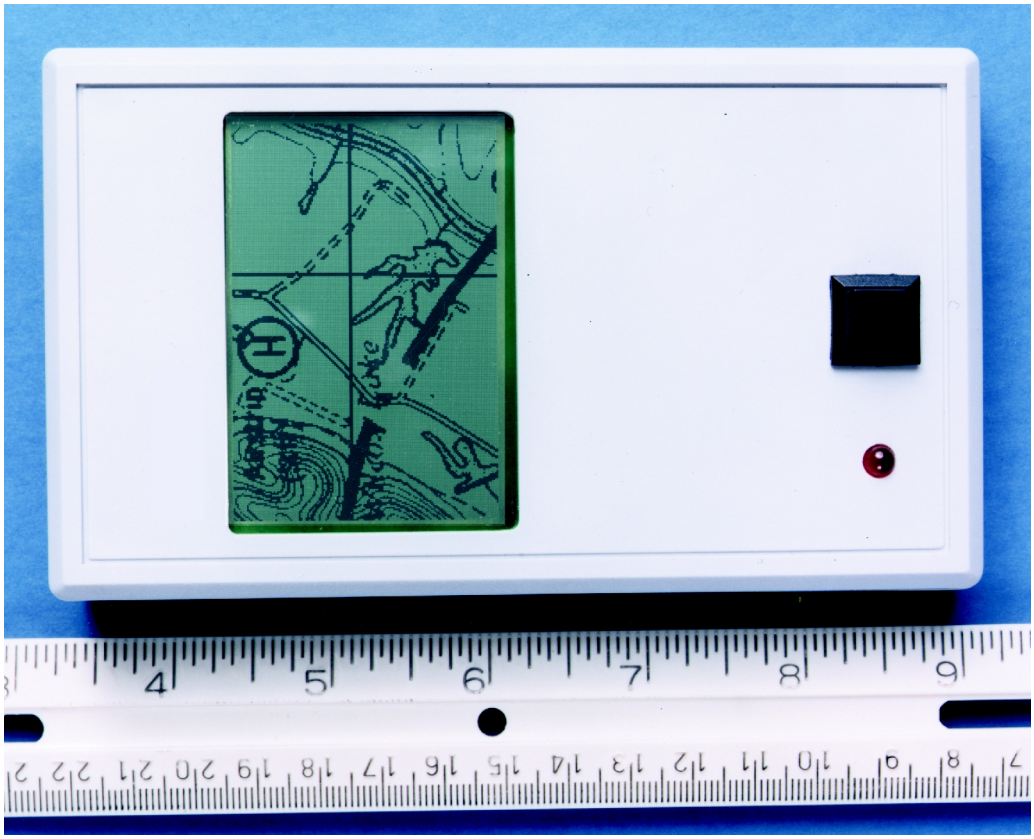
LIQUID CRYSTAL MATERIALS AND DISPLAYS



A 1/8 VGA (240X160 pixel) cholesteric reflective display (showing a digital map) fabricated from conducting polymer substrates. The display is fully multiplexed and requires no voltage to retain the image.

Liquid crystals constitute a state of matter that exhibits some properties characteristic of a liquid, such as viscosity and surface tension, along with the anisotropic nature of a solid. This unique combination of function and order makes liquid crystals attractive as materials for a variety of electro-optic applications, including assorted displays.

The Naval Research Laboratory (NRL) is in the forefront of liquid crystal research and has developed many liquid crystal materials and devices, including the following:

- Fast-switching materials with analog gray-scale capability
- Photo-sensitive monolayers for the alignment of liquid crystals for commercial and military displays
- Pyroelectric liquid crystals for uncooled infrared sensing devices
- Polymer-based, conducting, bistable displays that require no voltage for image display (shown above)

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